A Perfect Cloud for Rain

Lesson 1.5 Photo Guide

When the cloud droplets or ice crystals grow bigger they start to fall as precipitation. Sometimes, they fall all the way to the ground and land as rain, snow or hail. From a distance, they look like streaks reaching down from the cloud.

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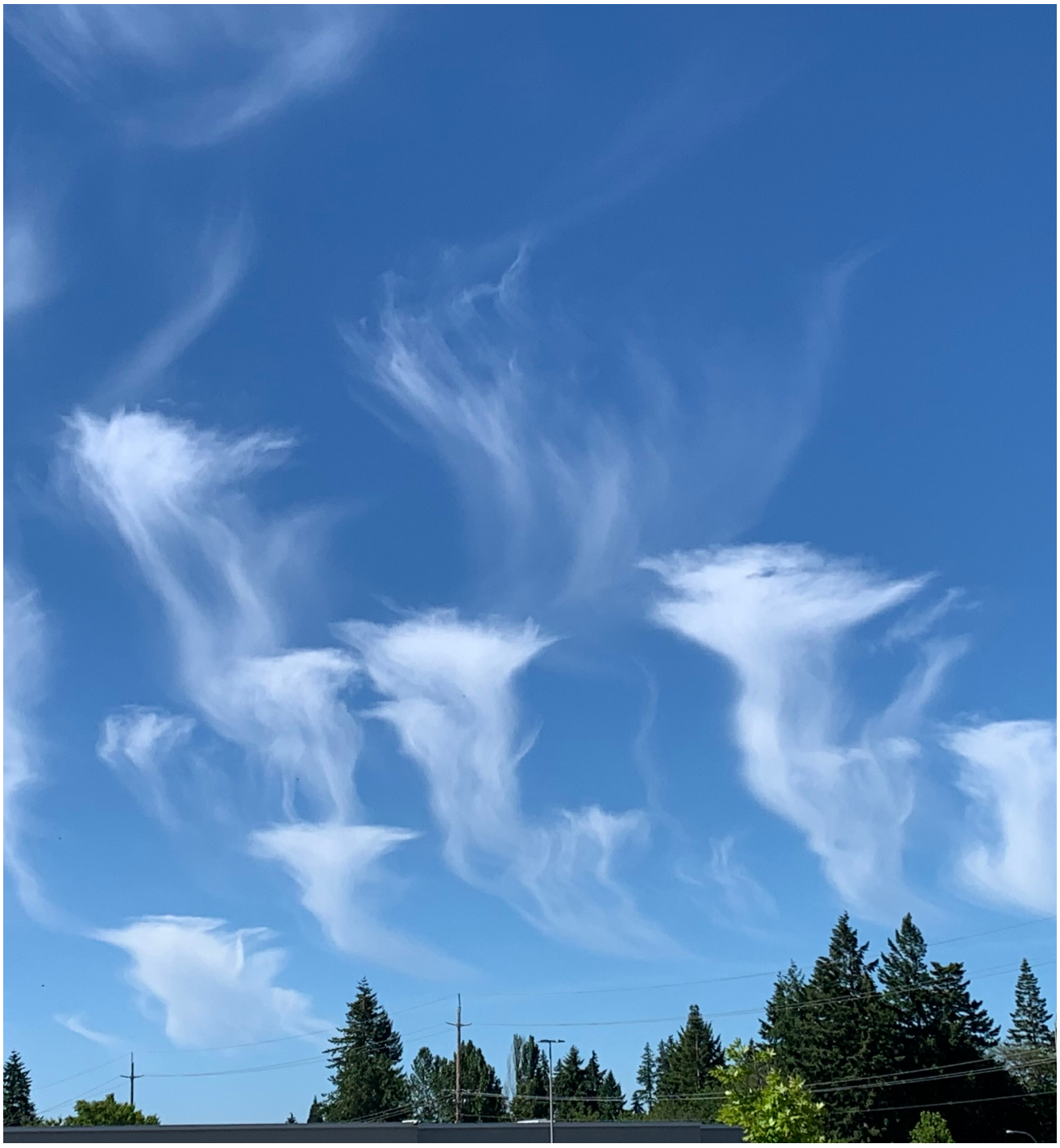
Praecipitatio spotted by Julie Smith



Why does precipitation land from some clouds and not from others? Rain, snow or hail is more likely to land from a cloud that has a low base. This is because it doesn't have to fall through so much air to reach the ground. Water falling from clouds that are higher up often fades away in the drier air beneath. This is when the streaks of falling water look like streaks dangling from clouds. Cloudspotters call these fading streaks of water virga. They are the jellyfish of the sky:

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Virga spotted by Robin Cole

Clouds need to be tall to produce much in the way of precipitation. The taller a cloud, the more likely it is to produce rain, snow or hail. Why do tall clouds make rain? The taller a cloud is, the colder it gets up at the top. The colder a cloud gets, the more likely its tiny water droplets will freeze into ice crystals. And when that happens, the ice crystals up at the top of the cloud start to grow and grow until they become big enough to start to fall.

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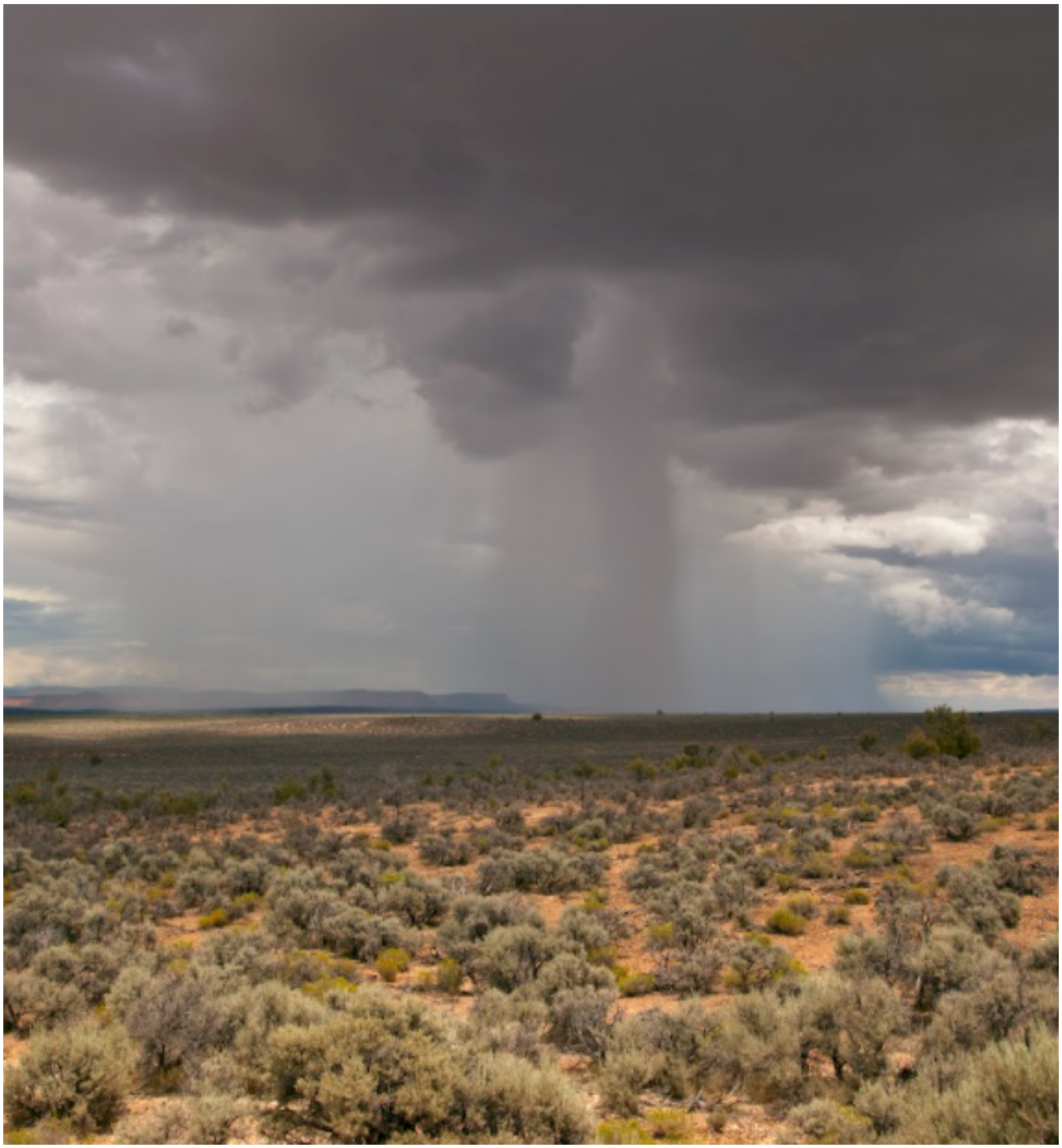
Cumulonimbus spotted by Rigel Keffer



Tall clouds have dark bases because the light from the Sun up above can't shine down through them. A cloud with a very dark base is a cloud that is likely to soak you because: dark base means tall cloud, tall cloud means ice crystals forming at the top, ice crystals grow big enough to fall.

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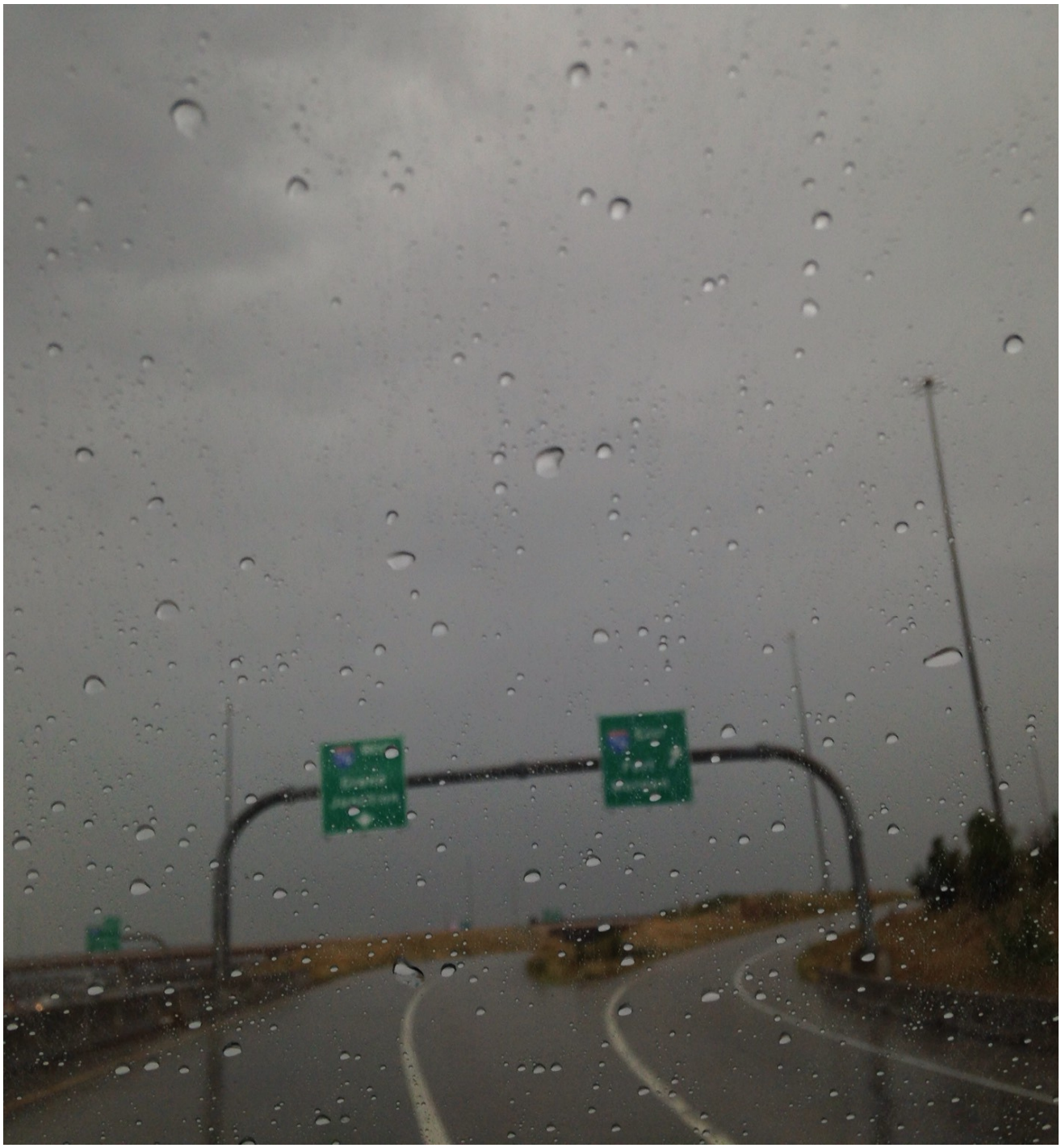
Localised shower spotted by Tom Bean



Which clouds make precipitation? The two clouds that always make precipitation have ‘nimbus’ or ‘nimbo’ in their names: Nimbostratus and Cumulonimbus. (Nimbus is the Latin for a rainy cloud.) The two clouds look different and make different styles of precipitation. Nimbostratus is a thick, dark, wet blanket of cloud that hangs around for a long time and rains and rains or snows and snows for a long time. This is a Nimbostratus.

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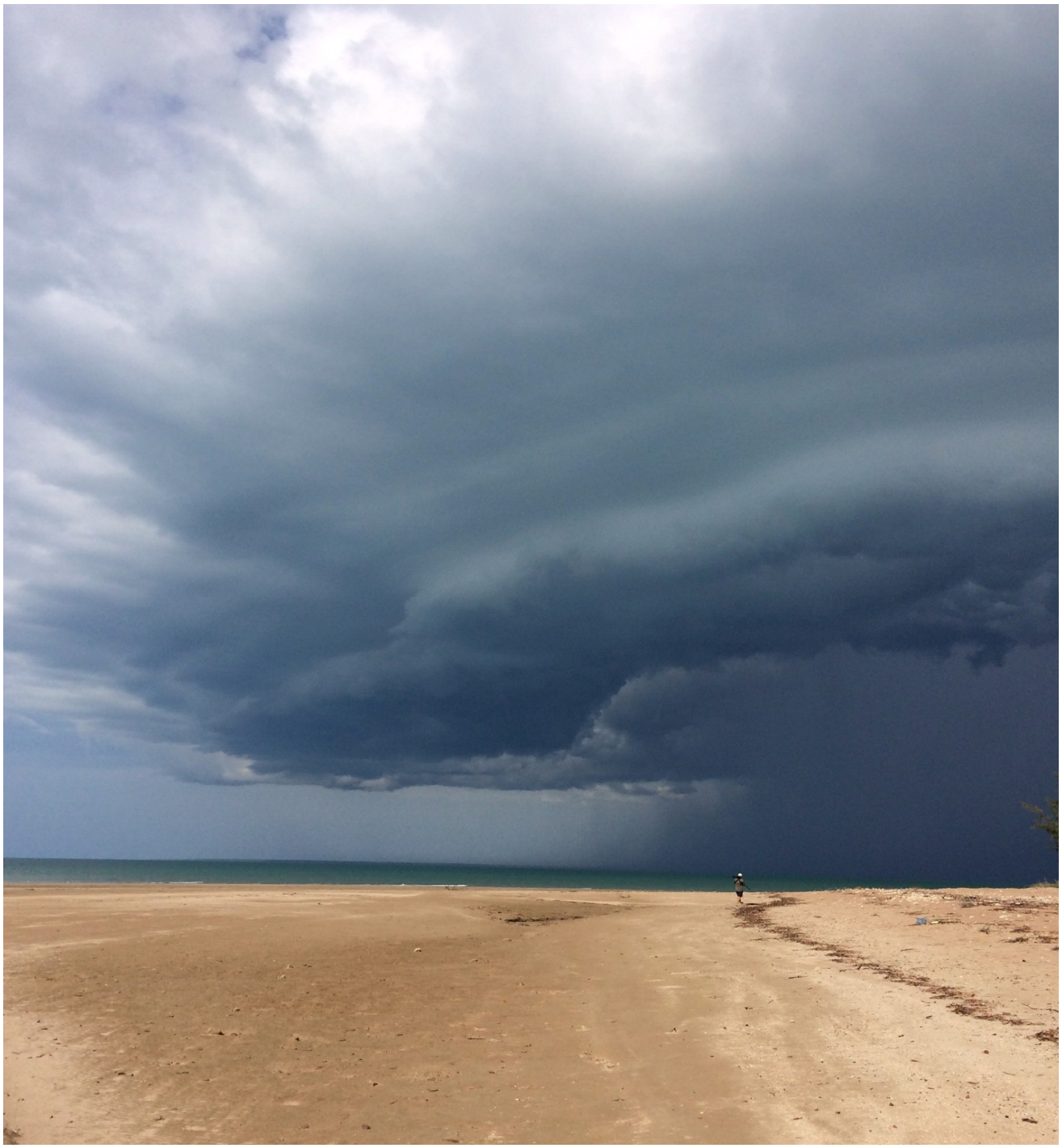
Nimbostratus spotted by Donna Clifford Martinez



A Cumulonimbus is the storm cloud, and this grows like a mountain in the sky, spreading outwards at the top like a huge mushroom. It produces showers that don't last very long but can be very heavy. Sometimes a Cumulonimbus can produce hail. The biggest clouds can make hailstones as large as tennis balls. This is a Cumulonimbus.

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Cumulonimbus spotted by Christopher Watson

Why do some clouds make rain, some snow and some hail? Most of the time, precipitation starts as falling ice crystals up at the top of a tall cloud. Whether this lands as snow or rain depends on the air that it falls through on the way down. If the air below the cloud is warm enough, the ice crystals melt as they tumble and land as rain. If the air below the cloud is cold, they stay frozen and they start to stick together into flakes of snow.

As well as being the thunder and lightning cloud, a Cumulonimbus cloud can produce hail. It does this when the wind inside it goes up and down and around and around causing the ice crystals to grow bigger and bigger as layer upon layer of ice freezes onto them. A Cumulonimbus cloud is like a washing machine and freezer combined. If you could cut a hailstone in half you can see the layers of ice.

The centre of a large hailstone with alternate layers of opaque and transparent ice.